

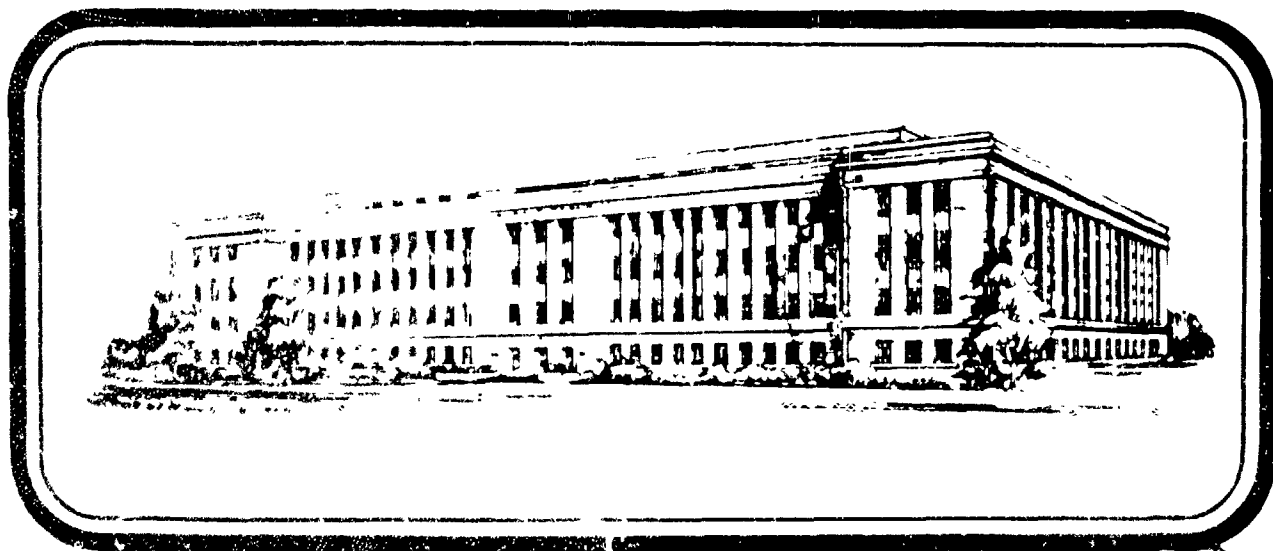


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**MOBILIZATION AND DEFENSE MANAGEMENT
TECHNICAL REPORTS SERIES**

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**IMPACT OF ENHANCED MULTIYEAR
PROCUREMENT ON DEFENSE ACQUISITION:
A STATUS REPORT**



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7. USN; CDR GARY D. WILLIAMS, USN

INDUSTRIAL COLLEGE OF THE ARMED FORCES
NATIONAL DEFENSE UNIVERSITY

MOBILIZATION STUDIES PROGRAM REPORT

IMPACT OF FINANCED MULTIYEAR PROCUREMENT
ON DEFENSE ACQUISITION--A STATUS REPORT

by

CAPTAIN WARREN R. ABEL, USN
LTC WILLIAM O. COOMER, USA
MR. PAUL D. HOSMER, D/N
LTC ROBERT T. PINIZZOTTO, USAF
MR. WILLIAM S. RONE, D/AF
COMMANDER DONALD S. WALLACE, USN
COMMANDER GARY D. WILLIAMS, USN

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A RESEARCH REPORT SUBMITTED TO THE FACULTY
IN
FULFILLMENT OF THE RESEARCH
REQUIREMENT

RESEARCH SUPERVISOR: DR. ABRAHAM SINGER

INDUSTRIAL COLLEGE OF THE ARMED FORCES

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**ABSTRACT OF STUDENT RESEARCH REPORT
INDUSTRIAL COLLEGE OF THE ARMED FORCES**

NAME OF RESEARCHER (S) CAPT Warren R. Abel, USN LTC William O. Commer, USA Mr. Paul D. Hosmer, D/N LTC Robert T Pinizzotto, USAF Mr. William S. Rone, D/AR CMD Donald S. Wallace, USN CMD Gary D. Williams, USN	TITLE OF REPORT Impact of Enhanced Multiyear Procurement on Defense Acquisition--A Status Report
SECURITY CLASSIFICATION OF REPORT Unclassified	REPORT NUMBER M MSP #27

ABSTRACT

PROBLEM STATEMENT: Enhanced Multiyear Procurement (EMYP) is an integral element of Secretary of Defense Caspar Weinberger's 1981 DOD Acquisition Improvement Program. Two years into the program, significant implementation problems continue to exist. This paper examines EMYP, investigating problems and outstanding issues.

FINDINGS/CONCLUSIONS:

1. Misunderstandings of EMYP concepts and terminology still exist;
2. Contractor investments in capital equipment and defense industrial base enhancements are not occurring as anticipated;
3. Frequently, for a given multiyear candidate program, it is difficult to identify the true savings attributable to the multiyear feature because different estimating techniques yield significantly different savings projections;
4. Congress, OSD, the military services and industry are reluctant to support EMYP for major weapon systems on a large scale.
5. Evaluation and selection criteria should insure:
 - a. That multiyear contracts result in true cost savings expressed in constant dollars;
 - b. That minimum program requirements be relatively stable over a period of years;
 - c. The items be technically mature and that the design be essentially frozen;
 - d. That budget requests should reflect reasonably accurate cost estimates.
 - e. That high confidence exists that the potential contractor(s) can perform adequately.

THIS ABSTRACT IS UNCLASSIFIED

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EXECUTIVE SUMMARY

This study analyzes the impact of Enhanced Multiyear Procurement (EMYP) on the acquisition of major weapon systems. EMYP is an important element of the 1981 DOD Acquisition Improvement Program (AIP). MYP has been revitalized under the AIP to save DOD acquisition funds, stabilize programs, decrease acquisition time, enhance the defense industrial base and stimulate contractor investment in capital equipment.

There has been significant progress in this area during the past two years including Congressional funding for eight weapon systems and subsystems in FY 82, and five in FY 83, publication of DOD and Service policy and directives, and submission of fourteen FY 83/84 proposed EMYP candidate programs. However, significant problems continue to exist. Congress, OSD, the military services and industry are reluctant to support EMYP for major weapon systems on a broad scale. Misunderstanding of EMYP concepts and terminology still exists at all levels. Industrial base enhancements and contractor investments in capital equipment as an outgrowth of EMYP have not occurred and are not being proposed as expected. DOD estimates of EMYP savings (as compared with a string of single year procurements) have been seriously questioned by Congress, especially when differing types of discounting techniques were used against expected cash flows.

Multiyear procurement has been used by the DOD since the early 1960s. Initially it was used by the Army to procure high-use support materials and to reduce production gaps associated with annual contracts. In the mid-sixties it was expanded to major systems. However, significant cost overruns for two Navy multiyear ship programs resulted in a Congressionally imposed \$5 million cancellation ceiling which effectively precluded the use of multiyear contracting for major weapon systems. This \$5 million ceiling remained in effect until interest in MYP was renewed in 1979-1980, resulting in EMYP inclusion in the 1981 DOD Acquisition Improvement Program. Subsequent Congressional actions again made multiyear contracting a viable option for major weapon systems acquisition. However, the FY 83 continuing resolution represented a retrenchment by Congress by imposing severe restrictions on the use of EMYP.

EMYP is not desirable or affordable for all DOD major weapon systems; therefore evaluation and selection criteria must be used to identify and justify the best candidate programs. EMYP programs must meet the following criteria:

- benefit to the government (savings)
- stabilized requirement
- stabilized funding
- stabilized configuration
- realistic cost estimates
- confidence in contractor capability
- impact on defense industrial base

EMYP for major weapon systems is relatively new and only limited actual data is available from the FY 82 and FY 83 EMYP programs. At this time, FY 84 programs proposed by DOD are being reviewed by Congress. The outcome of these reviews should determine the future of EMYP as a contracting method for major weapon systems.

CHAPTER I

INTRODUCTION

Ronald Reagan's election as President of the United States in November 1980 and the Republican Party's gain of majority control of the Senate was viewed by many as a clear mandate to fulfill Mr. Reagan's campaign promise to close the vulnerability gap by rearming America. To develop and implement an aggressive defense program, President Reagan chose Caspar Weinberger, a well known, respected attorney and a former government official and corporate executive, as his Secretary of Defense. Mr. Weinberger, teamed with Frank Carlucci, a long-time friend and associate, resolved to prepare an enhanced defense program to fulfill the President's promise.¹

In April 1981, after a comprehensive internal review of the Department of Defense, Deputy SECDEF Carlucci issued a memorandum titled "Improving the Acquisition Process." The memorandum outlined thirty-two specific actions, emphasizing improved long-range planning, shortening acquisition time, budgeting more realistically, reducing acquisition costs, and enhancing program stability.² The third action, Multiyear Procurement (MYP), reflected an enhanced version of currently used multiyear contracting methods for weapons parts, equipment and non-major defense systems. The proposed Enhanced Multiyear Procurement (EMYP) program was the result of months of concentrated efforts on the part of DOD officials and acquisition executives. The Enhanced Multiyear Procurement program was viewed as an important element of the DOD Acquisition Improvement Program. It was expected to yield average

dollar savings of ten to twenty percent in unit procurement costs through production economies and efficiencies, economic order quantity buys and better utilization of industrial facilities. It was also expected to stimulate investment in production equipment, resulting in higher-quality products and to provide increased program stability to enhance the continuity of subcontractor supply lines and decreased acquisition time.³

During the past two years, much progress has been made relative to EMYP. This includes Congressional authorization and funding for eight weapon systems and subsystems in FY 82 and five in FY 83, new DOD policy and directives on MYP, service and DOD evaluations and proposals for FY 84 EMYP candidate programs, and a generally more enlightened Congress, DOD and industry. However, major problems still exist. Congressional scrutiny of the FY 83 and projected outyear defense programs has resulted in many questions regarding the desirability of stabilizing funding for high value major weapon systems and the attendant loss of flexibility. DOD estimates of MYP savings have been questioned and frequently proved to be lower when present value and discounting analysis were considered. Investments in capital equipment and defense industrial base enhancements are not occurring to the extent anticipated. Finally, a lack of full understanding of EMYP concepts and terminology still exists at all levels.

Starting, by way of background, with a brief history of EMYP and a tutorial on terminology, this paper presents analyses of candidate selection and evaluation criteria, funding and cancellation ceiling, competition, and address outstanding issues. Finally, observations and recommendations are provided for making EMYP a more effective acquisition approach for major DOD weapon systems.

FOOTNOTES

CHAPTER I (Pages 1-2)

¹David Whitman, "Caspar Weinberger and Weapons Acquisition Reform. The Case of Multiyear Procurement" (B) (C-95-82-472), Draft Case Study. Kennedy School of Government Case Program, Harvard University, Cambridge, Mass., 1982, p. 1.

²Dr. Abraham Singer and Colonel G. Dana Brabson, "Enhanced Multiyear Procurement for Improving Weapon Systems Acquisition," Concepts, Summer 1982, Vol. 5, No. 3, p. 112.

³Ibid.

CHAPTER II

HISTORY

The concept of multiyear procurement of selected weapon system programs consists of awarding a single contract for two to five years of requirements with annual funding derived from Congressional appropriations. These programs normally require significant front-end investment for economic order quantities (EOQ) used by the contractor during the life of the program. These contracts also include provision for a cancellation ceiling which is the maximum level up to which the government would reimburse the contractor for allowable expenditures if the government cancelled or reduced the contract.

This concept is not new; it has been in use since the early sixties when the Army used MYP to provide support material used on a recurring basis by its base facilities. These programs were small and dealt primarily with items that the Army used on a continuing basis. Multiyear was seen as a way to preclude the occasional gaps in supply which resulted from annual budget decisions.

The 1962 the Armed Services Procurement Regulations (ASPR), now known as the Defense Acquisition Regulations (DAR) reflected DOD approval of multiyear procurement provided that approach met the criteria of reduced cost, stability of design, and competitive contracts. It was easy to achieve competition in the early years of MYP because MYP was applied to relatively small programs. During this time frame, MYP was expanded to include long-term contracts for maintenance services and equipment supplies for Air Force bases outside the

United States. In 1967 the Congress limited multiyear, for service contracts only, to use outside the continental United States. This was an attempt by Congress to limit any loss of flexibility in its annual decisionmaking on programs, and the language of the law specifically prohibited expansion of MYP to major weapon systems. Until that time multiyear was not used to any great extent in procurement, owing largely to the complicated contracting procedures and the inability of the contractor to stabilize the design due to changing requirements.

The policy of full funding was in effect during that time, as it is today. Full funding requires funding for an entire fiscal year's end items of production.

MYP did not attract much attention when used with small programs but when it was expanded to major weapon systems the potential cancellation costs became very high and MYP began attracting a great deal of attention. In 1967 the DOD allowed the inclusion of unfunded cancellation ceilings for multiyear programs. At this point contractors were reimbursed for allowable non-recurring costs if a program was cancelled. These costs were for special tooling, preproduction runs and initial engineering but did not include labor or materials.

Utilization of multiyear was limited to production contracts of proven, stable programs which precluded expansion of multiyear to major weapon system programs which included research and development.

The multiyear program emphasis continued at a mixed level until it was expanded to include total package procurement (TPP) of major weapon systems

and most notably was used for ship procurement. In TPP, the multiyear contract was signed before any of the end items had been produced. The Navy's LHA and DD-963 programs were two examples of these TPP multiyear programs, and both were contracted with unfunded cancellation ceilings. The cost overruns for the LHA were over 300 percent and resulted in reduced production of five ships rather than the nine contracted for. Delivery of the final ships was accomplished 8 years late. The DD-963 cost overruns were nearly 400 percent and ships were also delivered late. Congress had to come up with \$109 million in cancellation costs for the LHA, and had the DD-963 been cancelled, there would have been an additional cancellation cost of \$279 million.¹

After that, major weapon system programs were not procured by multiyear techniques due to high start-up costs, reduced production learning due to low runs, and the potential for large cancellation charges. Congress would no longer accept being forced into the position of having to appropriate large sums of money to pay for allowable costs incurred by the contractor under the unfunded cancellation ceilings. In 1972 the Congress established a one million dollar cancellation ceiling which was intended to preclude the use of multiyear procurement for major programs. The ceiling was raised in the FY 73 Armed Forces Authorization Act to five million dollars; in 1976 the law was amended to allow MYP contracts with cancellation ceilings over \$5 million if Congress agreed to the higher ceilings. The relatively low ceiling coupled with DOD's reluctance to ask Congress for higher ceilings in specific cases essentially precluded any use of major multiyear contracting until 1982.

In 1980 the House Armed Services Committee (HASC) became an open supporter of expansion of MYP to major weapon systems and recommended elimination of the \$5 million cancellation ceiling. DOD was also pushing for procurement reform for major weapon systems. A major reason for the resurgence of interest in MYP was that it was viewed as one approach to help to stop deterioration of the industrial base which was in turn reducing the defense mobilization capability.

By mid-1980 the proposed multiyear concept included recurring costs in the cancellation ceiling and allowed expanded advance procurement of economic lot quantities funded on a termination liability basis. During that same year the Defense Science Board recommended lifting the \$5 million cancellation ceiling limit and revising the DAR to allow recurring costs to be covered.

In the fall of 1980 the HASC met to assess the condition of the defense industrial base and commissioned a panel on the Defense Industrial Base under Congressman Richard H. Ichord to continue to study the problem. Witnesses of the Ichord hearings recommended repeal of the \$5 million cancellation ceiling and use of multiyear to improve the defense base. The panel found that the industrial base was deteriorating, and DOD was actively addressing the problem. Current acquisition policies were noted to be extremely inflexible and in need of revision to promote stability and encourage capital investment which would result in savings to the government through efficiencies. The panel recommended legislative change to raise the cancellation ceiling for multiyear programs and to specifically authorize multiyear contracting for major weapon systems, allowing coverage of both recurring and non-recurring

costs. Thus, when the new administration came into office, the stage was set for the revival of multiyear procurement.

On 2 March 1981, Secretary Weinberger initiated a thirty-day assessment of the defense acquisition process directed at cost reduction, production efficiency, increased stability and shorter lead times. As a result of this study, Secretary Weinberger and Deputy Secretary Carlucci decided to make major changes in the acquisition philosophy and process. The actions to accomplish these changes were issued in the Deputy Secretary's memorandum entitled "Improving the Acquisition Process." The actions outlined in the memorandum were informally called the "Carlucci Initiatives" or "Carlucci Actions" and represented the Defense Acquisition Improvement Program. The third of the 32 Actions was a revival of MYP as Enhanced Multiyear Procurement (EMYP).²

The major theme under consideration in 1981 and early 1982 was the widely recognized policy of full funding of defense Production programs. The consternation was over the funding of cancellation ceilings which were almost never used in critical defense programs. At that time cancellation payments were limited by the Defense Acquisition Regulations (DAR) to non-recurring costs.

In 1981 the Congress raised the \$5 million cancellation ceiling to \$100 million per contract and the services each presented FY 82 candidate major weapon system programs for multiyear procurement, such as the F-16 and the C-2 aircraft. Gains were made in the area of procuring outyear materials for reasons of economy, called Economic Order Quantities (EOQ). Congressional

arguments against EMYP at that time emanated from a lack of sufficient confidence in the validity of expected savings and expected industrial base enhancements, a reluctance to commit future Congresses to major acquisitions, and a perception that EMYP constituted a reduction of Congressional oversight.

There were three basic proposals for funding the cancellation ceiling--the unfunded cancellation ceiling, the fully funded cancellation ceiling, and variations of incremental funding. The DOD Comptroller preferred fully funded programs which included funded cancellation ceilings as they ensured that the government would, if cancellation became necessary, receive completed end items of the buy projected to that point. The major problem with this alternative was that the services envisioned a loss in available Total Obligation Authority (TOA) because of the need to fund relatively large up-front costs for the programs. The front-end loaded programs constituted a funding bow wave and represented a hard tradeoff of prospective systems versus cost savings over a two-to-five-year period for a system that was already in production. After all the concern over how to fund multiyear and the numerous proposals from several areas, the full funding policy remained. A 29 December 1982 decision of the Council on Integrity and Management Improvement (CIMI) on multiyear procurement and program stability concluded that any change to existing funding policy would only be a short-term benefit, and might adversely affect program stability in later years. They also found that no additional programs would be presented by the services if the funding method for multiyear were changed. The CIMI, however, retained the flexibility to allow other funding approaches when justified on a case-by-case basis.

FOOTNOTES

CHAPTER II (Pages 4-9)

¹David Whitman, "Caspar Weinberger and Weapons Acquisition Reform. The Case of Multiyear Procurement (C-95-82-472), Draft Case Study, Kennedy School of Government Case Program, Harvard University, Cambridge, Mass., 1982, p. 11.

²Ibid., p. 1.

CHAPTER III

TERMINOLOGY

Because of the numerous changes involved in implementing EMYP, many commonly used terms took on new shades of meaning. The problem was perceived from the outset and a complete set of definitions (see Appendix A) was included in Deputy Secretary Carlucci's "Policy Memorandum on Multiyear Procurement" of 1 May 1981. Under EMYP not only did government contracts have the unique feature of termination for convenience, and cancellation clauses, but they also had cancellation ceilings. Annual funding, full funding, incremental funding, and termination liability funding and cancellation ceilings had to be considered in light of policy and law, and the differences between the concepts had to be fully appreciated.

Despite early recognition of terminology problems, and attempts to clarify, misuse of terminology remained as a cause of implementation problems more than a year later. Efforts to resolve differences between cognizant organizations responsible for revising directives to accommodate the peculiarities of EMYP were in part continually impeded by semantic problems. During our research surveys in the fall of 1982, discussions with cognizant personnel from the various service and professional communities showed that the terms were being misused, and in fact, often perceived problems were not really problems. Further aggravating the situation was the creation of some hybrid terms such as "full funding to termination liability" which frequently distorted issues and interpretations.

The reason for continuing problems with terminology can be appreciated when considering that four professionally diverse groups had to deal with the implementation, including the Congress, industry, financial staffs of DOD and the services, and the procurement communities. Each group has its own institutional responsibilities which caused difficulty in reaching acceptable implementation guidance.

Nearly all published articles on EMYP included a list of terms, similar to Appendix A, as part of, or as an appendix to the article. This reaffirmed the criticality of clear definition to concept comprehension. No attempts to expand upon, delete from, or change the basic list are made in this report. The terms have been resorted and discussed at length, but none were altered. The list is adequate as currently constituted. However, the various groups concerned must recognize the significance of the precision of the terms and attempt to refrain from attaching professional bias to them.

In addition to terminology variances between the groups, there was disagreement within the groups. For instance, some procurement personnel feel that the cancellation ceiling would cover the contractor's undepreciated capitalization costs if the multiyear contract is cancelled. Others feel that since depreciation costs are part of normal overhead, the contractor would not recover the undepreciated balance as unamortized costs under the provisions of the cancellation ceiling, but would merely spread those costs over the remaining business base. In fact, the resolution of this question resides in determinations under contract law, not in contract policy. The termination or cancellation proceedings would assess the impact upon the company in terms of

amount of reduced business base and equitable settlement terms. If resolution lies in the hands of settlements under the law, the government and the contractor would be hard pressed to establish the level of the cancellation ceiling.

Although terminology problems may be attributed to the diverse nature of the groups involved and the terms transition from previous usage to their new usage in EMYP, there is a more subtle cause that enhances the confusion factor. A concept is developed and defined under the terms provided. However, that concept will tend to move from one definition to another. The following hypothetical examples illustrate this problem.

-- A contractor familiar with the Ichord hearings and the MYP concept identifies a contract/production plan in which he envisions a large subcontract for material to be delivered over a specific timeframe. In scrubbing the plan he finds that this "recurring" cost will not be covered under the cancellation procedures despite Congressional approval to do so. DOD financial policy elects not to cover recurring costs because it is assumed that he will want to bill for the items as funds are available and the items are received, and a cash outlay cannot be made against an unfunded ceiling. His only logical alternative is to reverse his course and reidentify the material as advance procurement.

-- Multiyear procurement is intended in part to enhance the production base and reduce costs through increased capitalization to improve efficiency. The contractor generates a modernization plan for his plant which he feels is reasonable in light of an anticipated 5-year contract that would provide the required stability. Under current MYP rules he has three choices to obtain

contractual coverage of these costs. First, he can capitalize the costs to increase his overhead burden and thereby recover the cost over a five-year period but this provides him no protection in the event of cancellation. Second, he can propose these costs as "special tools and test equipment" which are classified as non-recurring costs. This proposal, if accepted, would allow him to receive payments as costs are incurred. Third, he can propose that these non-recurring costs be included in an unfunded cancellation ceiling with a specific payback schedule. Based on current interest rates it is not surprising that most contractors elect, if possible, to follow the second course. When Congress reviews this program, however, they would expect that these charges would be included in the third option. This then is a terminology problem between the various groups.

-- A subcontractor has a contract to produce subassemblies to a prime with an EMYP contract. The length of the delivery schedule and production run make it reasonable to install money saving production equipment. The charges for the subassemblies appear on the books of the prime as a recurring cost. If recurring costs are not accepted under the cancellation ceiling, does the subcontractor have protection under the cancellation ceiling for his non-recurring start up costs?

In the hypothetical situations discussed, forces such as cash flow, allowability, and protection drive the concept - whether a cost is a capital improvement, recurring cost or non-recurring cost - from one definition to another. The physical appearance or capabilities of the production effort may or may not change at all. The definition change may or may not be sensed depending upon the point of view of the professional group involved. All groups involved must share an appreciation for what terminology applies, whether it changes, and how to control the forces that drive the decisions.

CHAPTER IV

CANDIDATE SELECTION/EVALUATION

This section of the report will address how to discriminate between good, marginal, and poor candidate EMYP programs. To accomplish this we will briefly review the history of program selection through the FY 83 budget submission; evaluate methods utilized by Congress, GAO, OSD and the Services; consider results to date; and finally provide an assessment of valid criteria to rank various EMYP candidate programs.

History

The historical development and use of MYP has had a profound impact on the current actions of DOD and Congressional policy initiators. In 1962 DOD approved MYP in ASPR 1-322.1 which described MYP as:

"a method for competitive contracting for known requirements for military supplies, in quantities not in excess of planned requirements for five years set forth in, or in support of, the Department of Defense Five-year Force Structure and Financial Program, even though the total funds ultimately to be obligated by the contract are not available to the contracting officer at the time of entering into the contract. Under this method, contract quantities are budgeted and accounted for in accordance with the program year in which each quantity is authorized."¹

Although the evaluation/selection criteria were largely informal, the major criteria were:

- 1) Is the program included in the FYDP?
- 2) Does a MYP contract benefit the government?

These simple criteria appeared to be totally adequate as MYP fell into greater and seemingly effective use. This false sense of security was shattered by the \$109 million of cancellation charges resulting from the cut-back of the multi-year shipbuilding contracts on the LHA-1 class ships. The magnitude of these cancellation charges caught Congress off guard. Their immediate response was to establish a third criterion:

3) MYP contracts, with a cancellation value of greater than \$5 million, require specific Congressional approval.

DOD perceived this provision as effectively precluding the future use of multiyear procurement contracts for major weapon systems since the practice was to issue a contract for multiple year quantities at a fixed (average) unit cost for the entire buy. The government paid the average rather than the higher "real" price for the first few lots, and therefore a cancellation charge was necessary to protect the contractor from a future program cancellation.

As an alternative, DOD could have abandoned the flat pricing policy. In fact, there were subsequent MYP contracts such as the MK-46 torpedo which priced successive lots at their true unit costs and therefore eliminated the need for a cancellation ceiling. However, in 1972, the \$5 million restraint was the death knell for MYP of major programs and for the most part the technique was dropped until Reagan's election in 1980.

In reality, other reasons contributed to the abrupt decrease in the use of MYP such as the extreme turbulence in DOD programming through the late 1970s combined with ever increasing Congressional oversight of the Department. During the Vietnam War years, the Department of Defense clearly did not have a

stable enough plan for major or non-major programs to warrant the use of MYP. These years were characterized by multiple supplemental appropriations, rapid changes of requirements, and the need to accelerate deliveries of goods in some areas. None of these actions were conducive to utilization of MYP techniques. Since the Vietnam hostility cessation in 1972, the defense program has been anything but stable. Review of all five-year plans from 1972 through 1980 showed extreme optimism regarding future procurement rates. In fact, DOD budget officials were quick to point out there wasn't firm top level control of outyear programs in the sense of remaining within reasonable projections of TQ\.. Congress required submission of outyear procurement programs only, without the accompanying details for Operations and Maintenance. Accordingly, the usual practice inflated projected procurement funding and decreased the annual accounts to assure the major procurement programs looked "good" for the upcoming Congressional Review (e.g., unit cost, production rate and total program cost).

In addition, there were numerous service/DOD arguments regarding the quantity of weapons required. Many programs such as the MK-48 torpedo, the F-14 and F-111 aircraft, and the Mechanized Infantry Combat Vehicle (MICV) were in a constant state of turmoil with the projected production demise being only one or two years in the future and then only at reduced and inefficient production rates. The program turbulence during these years cannot be overlooked since it significantly influenced the thinking of all policy makers toward contracts which committed the government to established buys in the out-years.

While these two forces were active inside DOD another force was growing which contributed to the decline of MYP contracting until the 1980s. This was increased Congressional review of the Budget and particularly the DOD budget portion. There was a large increase in required Congressional reports such as the Selected Acquisition Report, Congressional Data Sheets, Five Year Ship-building programs and other documents designed to give Congress detailed visibility of projected Defense needs. The increased documentation along with increased levels of staffing inevitably led Congress deeper into involvement in the decision process over requirements and annual production rates. Thus another level of instability was added.

One other major change during this period was the change from no-year to multi-year appropriations. On the surface, this change, which put a definite life to the obligation of a single year's appropriation, wouldn't seem to have a major influence on contracting methods. However, it caused Congress to view individual liabilities from a different perspective. Under multi-year accounts, each year's appropriation must bear its own weight and finance all applicable charges. Under the no-year appropriations, each year's funds were added to the amounts previously appropriated for that class of charges. This change made policy makers more hesitant to sign multiyear contracts since the payment of cancellation charges, if any, would come from a smaller pool of dollars, and therefore would be more visible and disruptive.

These four factors, along with other minor forces such as the feeling that procurement was essentially the only controllable portion of the DOD budget, were responsible for the decline in the use of MYP in the period of 1972-1982. These factors, when combined, gave DOD Program Managers, program

reviewers, and policy makers a mindset that "locking" into a specific outyear program was not "good" business since DOD managers needed to keep options open for change.

Secretary Weinberger, in his management improvements, recognized that these attitudes contributed significantly to the perception of waste in the Defense acquisition process. The DOD Acquisition Improvement Program was aimed at eliminating waste and one of its initiatives was to emphasize the use of EMYP. However, the SECDEF recognized that emphasizing use of EMYP was not enough and the previously discussed conditions had to be corrected. The management initiatives struck at the major factors which had previously caused waste. The key provisions recognized that MYP programs must be stable. More authority was delegated to individual services and SECDEF pledged not to revisit decisions, thus reducing the amount of second guessing regarding requirements. Funding levels for DOD programs increased to where senior managers were willing to "lock-in" significant portions of procurement funds in EMYP contracts. Finally, the executive branch convinced Congress that the previous constraints on MYP were too restrictive.

These actions were designed to counter the historical mindset regarding MYP and to promote identification of candidate programs. These efforts succeeded and a large number of programs were reviewed to determine suitability for EMYP techniques. However, only 15 programs survived for submission to Congress in the FY 82 Supplemental/FY 83 budget request. How were these programs selected and what criteria was used to select only 15 programs for submission? What criteria did the Congress use to reduce this list to only 6 programs?

Selection Criteria

On 1 May 1981 the Deputy Secretary of Defense issued a policy memorandum on EMYP. This memo established a clear policy "to acquire required property and services in the most economical manner" and specified that "the economies and efficiencies of EMYP contracts shall be balanced against risks from unstable operational, technical, design, or quantity requirements." Accordingly the following criteria for program selection were established in the memo:

CRITERIA

1. BENEFIT TO THE GOVERNMENT. Multiyear procurement should yield substantial cost avoidance or other benefits when compared to conventional annual contracting methods.
2. STABILITY OF REQUIREMENT. The minimum need (inventory or acquisition objective) for the production item or service is expected to remain unchanged during the contemplated contract period. This stability relates to total quantities and fiscal year phasing.
3. STABILITY OF FUNDING. There should be a reasonable expectation that the program will be funded at the required level throughout the contract period.
4. STABILITY OF CONFIGURATION. The item should be technically mature, have completed Research, Development, Test and Evaluation (including development testing) and be free of significant design changes.
5. DEGREE OF COST CONFIDENCE. There should be a reasonable assurance that cost estimates for both contract costs and anticipated cost avoidance are realistic.
6. DEGREE OF CONFIDENCE IN CONTRACTOR CAPABILITY. There should be confidence in the potential contractor's performance capability.

7. IMPACT ON DEFENSE INDUSTRIAL BASE. An assessment of the impact of the EMYP contract on the defense industrial base is required in terms of improved competition, enhanced investment, improved vendor skills, improved training programs, and increased production capacity.

These seven criteria formed the basis of the DOD selection process for the FY 82 Supplemental and FY 83 budget request. Prior to discussing the criteria added by the Congress, a few comments regarding the candidate programs, vis-a-vis the criteria, are provided:

COST SAVING - Only five of the candidate programs forecasted cost savings in excess of 10 percent. This was significantly less than the 10 to 20 percent savings estimated by defense officials and industry witnesses during Congressional hearings.

STABILITY OF REQUIREMENT - Almost all of the EMYP candidates have shown significant total program quantity increases in the FY 83 budget when compared with the last program proposed by President Carter.

STABILITY OF FUNDING - Defense officials had no problem meeting this criterion since it merely asked "Do you plan to fund this program next year if you get your expected level of funding?"

STABILITY OF CONFIGURATION - This criterion forced DOD to select mature production programs. This criterion was one of the major determinates of candidate selection.

DEGREE OF COST CONFIDENCE - For this criterion, DOD officials primarily based their assessment on recent contractor return costs vs. budgeted costs. However, in cases like the Blackhawk aircraft, the results of an intensive cost analysis by a "Should Cost" team was substituted for recent expense.

DEGREE OF CONFIDENCE IN CONTRACTOR CAPABILITY - Since in virtually all cases, the candidate programs would be produced by the same contractor, in a Single Year Procurement (SYP) or MYP mode, this criterion did not significantly affect candidate selection.

IMPACT ON THE INDUSTRIAL BASE - This criterion was insignificant, since the previous criteria limited candidates to programs already in production.

Subsequent to the FY 83 budget submission, three additional criteria were established by Congress. The first concerned net present value (NPV). At the request of the House Appropriations Committee (HAC) the General Accounting Office (GAO) conducted a review of all proposed FY 83 candidate programs. The GAO then recommended that the projected savings for all proposed EMYP programs be evaluated in terms of NPV, so to consider the time value of money on an outlay basis.

Next the GAO reported that "the budgetary nature of the justification data . . . are insufficient to establish the reasonableness of the claimed savings. We believe that, as a minimum, firm contractor proposals on both an annual and multiyear basis are needed for such a determination. The cumulative impact of the assumption, assertions, and judgments in the budgetary data makes a meaningful comparison of the relative costs . . . impossible at this time."² Subsequently, the Senate Armed Services Committee (SASC) requested the Congressional Budget Office (CBO) to rank the EMYP candidates using another mathematical technique called Internal Rate of Return (IRR). This involves a series of NPV calculations utilizing various discount rates until a rate is found which reduces the NPV of these cash flows to zero. The SASC preferred this technique for ranking candidate programs.

The aforementioned criteria established the formal procedure for Congressional evaluation of EMYP candidates for the FY 83 budget.

The following chart displays comments regarding each program by the Congress:

PROGRAM	PROJECTED SAVINGS	IRR RANK	COMMENTS	FINAL RESULT
Standard MSL				
Guidance	82.7	8	1	Not Approved
Motor	5.0	6		Approved
C-2A	58.4	5	2,3	Approved
CH-53E	44.8	17	2,3,4,10	Not Approved
A-6E	25.6	16	2,3,4,10	Not Approved
EA-6B	25.2	17	1,2,3	Not Approved
UH-60	81.1	1	3,5,6	Approved
MK-46	38.1	4	3,7,8	Approved
F-16	350.0	9	5	Approved
KC-10	658.0	13		Approved
DMSP	49.3	10		Not Approved
Mule	5.5	3		Not Approved
NATO Sea Sparrow	37.2	2		Approved
AN/ALQ-136	38.2	15	3	Approved
Fleet Oiler (TAO)	66.5	7	8	Not Approved
MLRS	111.3	12	3,8	Approved
NAVSTAR	249.3	14	9	Approved
TRC-170 Radio	18.0			Approved
ELM File Control	68.0			Approved

- 1/ Navy did not supply sufficient justification of savings - HASC.
- 2/ Production rate too low to generate significant savings - HASC.
- 3/ Proceed, but 30 days prior to contract signature, notify Congress of all benefits to be derived from the EMYP - SASC.
- 4/ Projected savings are primarily a result of escalation avoidance - HASC.
- 5/ Sufficient production rate to generate savings - HASC.
- 6/ Savings based on detailed contractor proposals - GAO, HAC.
- 7/ Requirement has fluctuated significantly over recent years - GAO.
- 8/ Should be considered for competition or increased levels of competition - HAC.
- 9/ Design stability questioned - GAO.
- 10/ Quantity stability questioned - HASC.

In addition to these specific comments, Congress also made the following general comments regarding FY 84 and subsequent EMYP candidates:

- DOD must obtain two contractor proposals, one annual and one EMYP, to accurately determine savings.

- DOD must utilize NPV procedures as directed by Office of Management and Budget (OMB) Circular A-94.

- DOD must prioritize EMYP candidates.

- Before EMYP candidates are submitted to Congress, alternative procurement strategies such as breakout, competition and second source must be considered, since they often generate greater savings than EMYP.

- No appropriation can be used to initiate an EMYP on a major program without specific approval.

- No EMYP contracts can be signed with an EOQ, or an unfunded cancellation liability of over \$20 million without Congressional notification.

As of 1 February 1983, 13 of the 20 proposed programs are apparently being approved for implementation. Since the final appropriations conference position has not been established changes are probable.

The lessons learned from this process are:

A. Congress recognizes that savings in the 10-20 percent range, as forecasted in previous testimony, are not achievable on all programs.

B. To be approved, DOD candidate programs should show positive savings using NPV techniques. Use of this technique, however, presented significant problems since both NPV and IRR analyses compare outlay streams not budget authority. DOD's ability to accurately project these outlays is highly suspect. During their reviews, both the GAO and CBO noted major inconsistencies in DOD's projected outlays.

If either NPV or IRR analysis is used, DOD must study outlay patterns of EMYP contracts.

C. Congress does not consider inflation avoidance as savings.

D. The original DOD criteria are appropriate and acceptable to the Congress.

E. Congress will not allow DOD to enter into EMYP contracts for major programs without specific review.

F. Neither Congress nor OSD is willing to incur significant unfunded future liabilities.

G. DOD must "sell" its EMYP candidate programs. Congress is not likely to approve programs for EMYP without extensive levels of justification and backup material.

H. An unambiguous procedure for validating savings must be established.

I. Congress will monitor EMYP programs closely. Accordingly, DOD should be prepared, via the Selected Acquisition Report (SAR) or other appropriate reporting media, to keep Congress informed regarding the status of all EMYP programs.

J. Improvement of the industrial base has not been a strong criterion for selection of EMYP candidates. Previous criteria have led DOD and Congress, in large part, to approve MYP for only those systems which are already in production. This considerably reduces the impact of EMYP contracts on the industrial base since an adequate production base was already in effect.

FOOTNOTES

CHAPTER IV (Pages 15-26)

¹Logistics Management Institute, Implementation Status--Multiyear Procurement. February, 1965.

²Comptroller General of the United States, Letter (B-206570) to Congressman Joseph P. Addabbo, Subject: GAO Analysis of Projects Proposed by the Department of Defense for Multiyear Contracting in Fiscal Year 1983 Budget Request (PLRI)-82-72), 29 April 1982.

CHAPTER V

FUNDING AND CANCELLATION CEILING

From the time of its rebirth in 1981, the EMYP program has had a cancellation ceiling issue intertwined with funding policy issues. The term "cancellation ceiling" is unique to MYP. Throughout the government and industry, there existed as late as November 1982 some degree of confusion regarding just what a cancellation ceiling included, and how it interfaced with the DOD funding policies. The most serious confusion tied cancellation ceiling and termination liability together, and found them erroneously used interchangeably. This situation has essentially resolved itself as a result of broad discussions and briefings throughout the involved communities.

A cancellation ceiling represents the limit of liability which the government commits to cover under a specific multiyear contract. This coverage is typically an unfunded liability for certain risks incurred by contractors for such things as tooling and unrealized labor learning. It represents that risk beyond (above) the level of funding provided, which, normally in today's environment, is full funding for annual production and funding to termination liability for long lead and EOQ items.

Several proposals recently surfaced regarding methodologies for funding EMYP programs. They varied primarily in the degree of risk to the government in the event of a future program cancellation or change. The primary methods considered fell into three categories:

1. Funding to cancellation ceiling. This proposal requires the government to fully fund the total program (production, long lead, and EOQ items) to cover the annual and committed outyear cost, plus the limit of government liability if the contract is cancelled.

2. Funding to termination liability. This is the concept currently directed by DOD. It essentially involves full funding for the first year's end items and termination liability for all EOQ items. Any cancellation ceiling beyond termination liability would be unfunded.

3. A variation of incremental funding. One version of this approach is funding to annual outlays and covering potential cancellation cost through a pool revolving type fund. The major concern with this concept is that, while a specific program cancellation could be covered, it unnecessarily incurs an up-front funding risk. Also, the fiscal environment which typically would result in a program cancellation, such as severe defense budget cuts, could be expected to force cancellation of numerous programs at one time, thereby overtaxing such a fixed or actuarially based cancellation pool. Such a situation would put Congress in the position of providing bailout funds on a grand scale. This would be very similar to the situation Congress was in when it provided \$109 million required by the Navy in 1971/72 to cover partial cancellation of the LHA MYP ship contract.¹

As far as the scope, magnitude and degree of funding for the cancellation ceiling are concerned, Congress provided DOD with considerable latitude when it passed the 1982 Department of Defense Authorization Act.² Specifically,

while the law allowed inclusion of both non-recurring and recurring cost, DOD, in light of Congressional guidance, has essentially restricted coverage to just non-recurring cost. The DOD approach has been conservative, choosing to cover all recurring cost through full funding or termination liability, thereby negating any need for cancellation coverage of recurring cost. Basically, OSD has been sensitive to concerns over using procurement practices which would increase the Government's level of risk and which would not guarantee full funding of usable end items.

As a result, EMYP funding requirements basically call for large up-front commitments from the services' annual Total Obligation Authority (TOA). This in turn was, and is now, viewed as inhibiting the services from proposing many programs for EMYP since it reduces the number of programs the services can initiate within their TOA.

The net effect of the concerns was to settle on a concept of funding EMYP programs, and particularly the EOQ element, to the full annual cost and to termination liability. Based on this approach, the FY 83 DOD budget reflects a \$543 million increase in TOA for EMYP cost over what annual contracting would require.

The end of 1981 witnessed Congressional approval for a cancellation ceiling of up to \$100 million per contract without prior notification to Congress.³ This has recently been altered by the FY 83 Continuing Resolution (P.L. 97-377) section 765, and the House Appropriations Committee

report which imposes tighter restrictions on DOD.⁴ Of particular note is that Congress now:

1. requires prior notification for all EMYP contracts with a cancellation ceiling exceeding \$20 million;
2. requires notification on any EMYP contract if it has an EOQ option to be funded;
3. requires prior approval for all major EMYP programs.

Use of the unfunded cancellation ceiling to date has been limited primarily to coverage of non-recurring costs. The Air Force's \$14.6M unfunded cancellation ceiling on the AN/TRC 170 Troposcatter Radio, for tooling and unrealized labor learning, and the F-16 external fuel tank contract are among the few significant EMYP programs which exercised this option. Appendix E is an example of the contractual clause for the tanks. It is notable here that four of the Air Force's other significant FY 82/83 EMYP programs--the F-16 aircraft, the Defense Support Program, the NAVSTAR Global Positioning System, and the KC-10 aircraft--used a zeroed cancellation ceiling. (While DAR 1-322.2(C), provision 7-104.47(B) requires inclusion of cancellation clauses in EMYP contracts, the services are simply reflecting them in a "zeroed out" mode in many contracts (appendix F), thus not fully utilizing the tools provided under EMYP directives.)

Incidentally, part of the reason use of unfunded cancellation ceiling authority for nonrecurring costs has not been a major issue was that the original criteria qualifying programs for EMYP required that the programs be

stable. This led to choosing programs which had already accommodated the typical front end capitalization cost through their initial annual contracts. This situation can be expected to continue to some degree as long as program stability remains a key criteria for selection of EMYP candidate programs. If OSD eases this criterion, and moves EMYP candidate programs forward toward the system development phase, thereby accepting greater risk, more non-recurring costs suitable for inclusion in an unfunded cancellation ceiling will be available for inclusion in the contracts, and may thereby result in broader use of unfunded cancellation ceiling coverage.

Projected use is beginning to reflect a trend toward increasing reliance on the unfunded cancellation ceiling. Some of the Air Force's proposed FY 84 EMYP programs reflect this trend. Early estimates for unfunded cancellation ceilings place the B-1 aircraft at \$103 million, the F-15 aircraft at \$90.9 million, and the Communications Nodal Control Element at \$60 million. But the bulk of this is coverage for unrealized labor learning, rather than for tooling and capitalization. Thus one of the EMYP objectives viz., enhancing the industrial base, is still not being achieved directly through EMYP programs. More specifically, industrial enhancement is still directly tied to initial production contracts and to broader industrial base improvement programs such as the DOD Manufacturing Technology (Man Tech) efforts. What is happening, though it is not easily quantifiable, is that industry sources view EMYP contracts as providing a stabilized production program, and source of cash flow and profits, thereby providing a basis for the companies to support capitalization and modernization projects in other, non-EMYP contract areas.

We must, at this juncture then, ask whether it is desirable to initiate EMYP for selected programs closer to the development phase, and incur greater program risk, to directly influence enhancement of the industrial base. This would certainly insure greater enhancement of the defense industrial base. The alternative is to remain conservative relative to program stability, and gain industrial base enhancements only as a spin-off factor, with enhancements of many non-defense as well as defense resources, and with far less risk to the success of EMYP programs.

FOOTNOTES

CHAPTER V (Pages 28-33)

¹Congressional Record, U.S. Senate, 29 June 1970, pp. 220-26.

²Department of Defense Authorization Act, 1982, Public Law 97-86, 95 STAT., pp. 1118-1120.

³U.S. Congress, House of Representatives, Department of Defense Authorization Act, Section 909, HR 97-86, 2 December 1981.

⁴U.S. Congress, Continuing Resolution, PL 97-377, Section 765, 21 December 1982, and the House of Representatives Committee Report on Multiyear Procurement, pp. 97-100.

CHAPTER VI

COMPETITION

Lack of competition frequently causes inefficiencies and increased costs. Creating competition is one of the major difficulties faced by the government in defense contracting. Consequently, the impact of EMYP on competition is a critical issue.

The opportunity to amortize investment costs over a long term contract encourages plant modernization and makes EMYP contracts more attractive, thereby encouraging competition. Conversely, one of the concerns about EMYP is that awarding long term contracts will limit bidding opportunities and therefore decrease competition in the long run. These widely divergent views represent the two schools of thought on the impact of EMYP on competition.

At this time, the government has insufficient experience to answer the question of the impact of EMYP on competition. However, some data is available from a survey of defense contractors which does provide limited insights. The survey was accomplished by USAF Captains Stephen B. Pergans, and Lawrence J. Elbroch, while students at the Air Force Institute of Technology (AFIT)

At the time of the survey, EMYP had yet to be fully implemented. Most responses were based on what contractors expected EMYP would do rather than actual experience. The respondents included middle managers and executive managers from 34 contractors located throughout the United States.¹ A list of the contractors is included in Appendix B while the specific questions relating to EMYP and the statistical analysis of responses are included as Appendixes C and D respectively.

Over one-third of the responses came from executive managers, while greater than nine-tenths of the respondents were at least middle managers. More than 50 percent claimed actual EMYP contract experience within the last five years.²

The results of the survey showed EMYP may increase competition among subcontractors, but not among primes. This was supported by the neutral response to question 15 and slight agreement expressed to question 16 (Appendix C). Results were mixed for the remaining questions, but overall, those surveyed did not believe that EMYP would increase competition. The exception was the expectation that significantly more subcontractors would bid for defense work in an EMYP environment.³

Bergans and Elbroch concede a shortcoming in their work stemming from an inability to distribute their survey to firms which were vendors and suppliers for defense contracts. Consequently, the results reflected the opinions of larger firms whose involvement in defense programs was sufficient to warrant government representation at their plants. They concluded that it was likely the firms surveyed would compete for defense work under most circumstances. Further, the willingness of the vendors and suppliers to compete in the defense marketplace was an important issue which should be addressed in more depth in future research.⁴

An issue which Bergans and Elbroch did not consider was whether EMYP could create an environment which would attract companies to bid, either as prime contractors or as subcontractors, who normally do not seek defense business.

As stated previously, insufficient experience is available to provide definitive answers. For example, competition at the subcontractor level has increased significantly for the Black Hawk program. The FY 81 single year procurement yielded competitive bids for approximately 28 percent of the Black Hawk's bill of material. Under the FY 82-84 EMYP, competition was increased to greater than 50 percent.⁵ However, this is only one data point. Analysis of the environment of defense contracting and the impact of EMYP may provide some insight.

The structure and planning of the defense industry is based on the assumption that demand will remain relatively constant except in time of war. Demand has, however, been extremely cyclic and this is likely to continue. At the prime contractor level, a few companies are doing a major share of the business using large amounts of government funds, equipment, and facilities; their rate of return on investment is comparable to that in the private sector. The subcontractors and suppliers, on the other hand, usually receive a low rate of return on investment compared to the primes and small contractors in the civilian sector. In addition, as defense business diminishes, the prime contractors opt to "make" rather than "buy." Consequently, many small contractors have been going bankrupt or leaving defense business for the financially more attractive commercial markets.⁶

Although defense spending has dropped rapidly since Vietnam, concentration in the industry has not increased significantly. Major contractors have been able to maintain their share of the market and have been acquiring other defense companies both vertically and horizontally. To maintain their growth, many firms have been diversifying into civilian areas.⁷

What attracts large corporations to defense business? The following reasons are ranked in order of importance:

1. Government Funding of R&D - Paid by the government, there is a possible transfer of technology to the civilian sector.
2. Large Volume of Business - Business base and cash flow are important considerations. Emphasis on volume reflects orientation to sales rather than profit.
3. Experience of Managing Large High-Technology Programs - Many top corporate managers come from a defense background.
4. Long Term Runs - Once the initial development contract is awarded, there is essentially a five to ten year development plus at least five years of production and additional support assured if the program has any priority and is reasonably well run.
5. Countercyclical Balance for Civilian Business - Includes the opportunity to participate in wartime spending which often occurs during international crises.

Although a typical government program will have a single prime contractor, between 40 and 70 percent of the total business will be subcontracted.⁸

In theory, EMYP provides the time frame for a new prime contractor to amortize his capitalization costs, thus fostering greater competition for production contracts. In practice, however, this does not hold true for prime contractors on any major items of hardware. This is so because the technical expertise gained during development and initial production, start-up cost, political considerations, and brand loyalty serve as barriers to competition.

This tendency to long term commitments, once a development contract is won, is recognized by industry.

There are benefits from EMYP which can affect development contracts. EMYP will smooth the year to year production perturbations caused by annual program fluctuations, enable better planning and management, will increase profit potential, and thus may attract companies which normally do not seek defense contracting. In addition, for relatively simple items requiring low start-up costs, EMYP could create increased competition. An example is the Army's experience with the AN/ALQ-136 where an additional prime contract bidder was obtained when EMYP was initiated.⁹ But usually increased competition at the prime level will be minimal.

Creating a viable second source for sophisticated hardware requires government support to bring the second source to a competitive level. This has been accomplished by using two prime developing contractors or by using a leader-follower concept. These acquisition strategies were used infrequently because the potential savings on procurement costs were insufficient compared to the cost of developing a second source. This strategy coupled with an EMYP may have merit. The additional savings from an EMYP contract and longer term profit potential for the winning contractor could effectively reduce the costs of the U.S. Government developing the second source. This approach would have to be tailored to particular programs.

The world of the lower tier defense contractors, parts suppliers and sub-contractors, is significantly different from that of prime contractors. For the small subcontractor, the most important criterion is profit, as contrasted

to larger firms which emphasize sales volume. The cyclic trends in defense contracting are exacerbated for the subcontractor by the prime's tendency to shift more work from "buy" to "make" in periods of decreasing demand. Far more competition for contracts exists at the subcontractor level than at the prime, and there is more propensity to change contractors at the subcontractor level. If a subcontractor or supplier becomes the only qualified source, monopoly pricing follows and tends to balance this high level of competition. Low rates of production have even greater affects on subcontractor' efficiencies than on primes. Because of their limited staffs, they experience more difficulty in doing business with the government. This is caused by statutory requirements, complex procurement regulations, special accounting systems, and military specifications and standards. Further, the primes often add excessive data requirements to be met by the subcontractors. The prime contractor does not usually pass on the government's willingness to share the risk by using cost type contracts but often uses fixed price contracts for the vast majority of subcontracted work.¹⁰ This may nevertheless be justified in many cases because the greatest risk in program management is in integration, i.e., at the prime level.

Now consider the impact of EMYP on this already hostile environment in which the subcontractors and suppliers exist. Award of a three to five year EMYP will eliminate the losing subcontractors from competing each year for that contract. This may have a negative impact on competition perhaps forcing some subcontractors out of the particular business. On the other hand, there are benefits for the subcontractors. It will prevent a prime contractor from

arbitrarily shifting from a "buy" to "make" decision because his business base is dwindling. In addition, the subcontractor may produce his component at a more economic rate knowing he has an essentially insured demand over an extended period of time. The capabilities of the prime contractor to compete items each year and to drive prices down will be reduced. Extensive EMYP on the subcontractor level will serve, however, to stabilize demand at the subcontractor and supplier level. This should serve to attract additional companies to this area or at a minimum halt the decline in the subcontractor base. Overall, it is estimated that competition will be preserved and possibly enhanced. Further, the ability to amortize start-up cost over a longer period will be more attractive to small subcontractors than to primes. Similar conclusions were reached from the Bergans and Elbroch survey.

FOOTNOTES

CHAPTER VI (Pages 35-41)

¹Stephen B. Bergans and Lawrence J. Elbroch, "An Analysis of the Predicted Benefits of Multi-Year Procurement," Master's Thesis, Air Force Institute of Technology, Dayton, Ohio: 1982, p. 17.

²Ibid., pp. 19 & 119.

³Ibid., pp. 124-126.

⁴Ibid., p. 154.

⁵U.S. Army UH-60 Black Hawk Criteria for Multiyear Contracting FY 82-84 Airframe and FY 83-85 Engine Multiyear Procurement, Exhibit 7 (Washington, D.C., 10 Mar 82).

⁶Jacques S. Gansler. The Defense Industry (Cambridge, Mass.: MIT Press, 1980), pp. 1-6.

⁷Ibid., p. 39.

⁸Ibid., pp. 41-43.

⁹Interview with LTC George Leach, Office of the Deputy Chief of Staff for Research, Development and Acquisition, U.S. Army, The Pentagon, Washington, D.C., 7 January 1983.

¹⁰Gansler, pp. 129-146.

CHAPTER VII

SUMMARY AND CONCLUSIONS

There is a general reluctance to fully support implementation of the EMYP concept on a large scale. This reluctance underlies the espoused positions of Congress, OSD, the Services, and even industry. The reluctance stems from a desire to maintain the flexibility for changing programs that is afforded by annual contracting. This position contradicts the very rationale for using EMYP contracts, viz. the economies of long term commitments and program stability.

Since EMYP requires significantly larger up-front TOA, the services are reluctant to support very many individual major programs at one time. They view the larger TOA requirement as limiting the number of other programs which can be developed concurrently.

The DOD Comptroller has favored a policy of full funding for the current year and funding to termination liability for EOQ items. This insures that the services will acquire useable end items on an annual basis if for some reason a program is cancelled. This approach of being able to "walk away" from a program without any major fiscal problems is likely to remain the funding policy norm for the foreseeable future, to the consternation of those who desire to see a more relaxed funding policy.

As a result of the FY 83 Congressional review, some DOD officials have stated that EMYP is dead. This is not the case. Congressional actions to date have been cautious and reflect Congress' position that EMYP is not for

all programs. This approach is appropriate since EMYP is just one of the many procurement techniques available to acquire materiel in the most efficient way. If a program meets the established criteria--as described in the DEPSECDEF's 1 May 1982 policy memorandum--approval to utilize EMYP is highly probable.

It is recommended that DOD study outlay patterns of EMYP contracts closely in order to acquire sufficient data to utilize present value and internal rate of return types of analysis effectively. Pending completion of this study, such analyses should not be pursued. In addition, an appropriate standardized method for monitoring the cost savings of multiyear programs must be established.

A common industry charge is that the return on defense business is not competitive with commercial business. Here comparability usually focuses only on negotiated profits associated with awarded contracts. A more comprehensive analysis, extended to the total return to the contractor to include the return on investment, shows that defense business is reasonably competitive. Furthermore, if a contractor has a long term contract and confidence that the government's requirement will remain stable, as would be the case under EMYP, he may be motivated to increase productivity through increased production efficiency.

The industrial base has not yet been measurably improved as a direct result of an EMYP contract, even though such enhancement was one of the avowed objectives of EMYP. What does appear to be happening, though it is not easily quantifiable, is that companies are using the program stability and profit projections of EMYP contracts as a basis for making general capitalization improvements which are not tied to the EMYP contracts.

The impact of EMYP upon competition in the defense industry is a critical issue. So far no definitive answer to this issue exists. The preliminary indications are as follows: EMYP will not significantly affect prime defense contractors' decisions whether or not to bid on a major contract. The ability to amortize capitalization will not increase competition among prime contractors for production contracts. However, with increased stability in the defense industry, more contractors may be attracted to compete in defense business for systems in their development phase, although this number will probably be small. The major impact of EMYP on competition will occur at the subcontractor level. EMYP is likely to improve conditions under which subcontractors deal with primes. Additional firms will be attracted to this area with a net effect of increasing competition and helping stop the deterioration of the subcontractor base. The government can play a constructive role in this process by ensuring flow-down of EMYP provisions to subcontractors.

APPENDIX A
DEFINITIONS¹

Advance Procurement. An exception to the full funding policy which allows procurement of long leadtime items (advanced long lead procurement) or economic order quantities of items (advance EOQ procurement) in a fiscal year in advance of that in which the related end item is to be acquired. Advance procurements may include materials, parts and components as well as costs associated with the further processing of those materials, parts and components.

Annual Funding. The current Congressional practice of limiting authorizations and appropriations to one fiscal year at a time. The term should not be confused with two year or three year funds which permit the Executive Branch more than one year to obligate the funds.

Block Buy. Buying more than one year's requirement under a single year's contract. A total quantity is contracted for in the first contract year. Block buys may be funded to the termination liability or fully funded.

Cancellation. A term unique to multiyear contracts. The unilateral right of the Government not to continue contract performance for subsequent fiscal years' requirements. Cancellation is effective only upon the failure of the Government to fund successive FY requirements under the contract. It is not the same as termination.

Cancellation Ceiling. Upon cancellation, the maximum amount that the Government will pay the contractor which the contractor would have recovered as a part of the unit price, had the contract been completed. The amount which is actually paid to the contractor upon settlement for unrecovered costs (which can only be equal to or less than the ceiling) is referred to as the cancellation charge. Currently, this ceiling includes only non-recurring costs.

Full Funding. Funds are available at the time of award to cover the total estimated cost to deliver a given quantity of complete, militarily useable end items or services. Under current policy (DOD Directive 7200.4), the entire funding needs of the fiscal year production quantity must be provided unless an exception for advance procurement has been approved. A test of full funding is to ask the question, Does any part of this year's buy depend on a future year appropriation to result in the delivery of complete units? If the answer is yes, the contract is probably not fully funded. The principle of full funding applies only to the Procurement Title of the annual appropriation act and therefore affects production contracts but not RDT&E contracts.

Incremental Funding. Funds are not available at the time of contract award to complete a fiscal year's quantity of end items in a finished, military useable form. Future year appropriations are required in order to complete the items or tasks. Incremental funding is commonly used for RDT&E programs.

Multiyear Contract. A contract covering more than one year's but not in excess of five year's requirements. Total contract quantities and annual quantities are planned for a particular level and type of funding as displayed in the current FYDP. Each program year is annually budgeted and funded and, at the time of award, funds need only to have been appropriated for the first year. The contractor is protected against loss resulting from cancellation by contract provisions which allow reimbursement of costs included in the cancellation ceiling.

Multiyear Funding. A Congressional authorization and appropriation covering more than one fiscal year. The term should not be confused with two year or three year funds which cover only a one fiscal year's requirement but permit the Executive Branch more than one year to obligate the funds.

Multiyear Procurement. A generic term describing situations in which the Government contracts, to some degree, for more than the current year requirement. Examples include multiyear contracts, block buys, advance EOQ procurement. Generally, advance long lead procurements in support of a single year's requirement would not be considered a multiyear procurement.

Non-Recurring Costs. Those production costs which are generally incurred on a one time basis include such costs as plant or equipment relocation; plant rearrangement; special tooling and special test equipment; preproduction engineering; initial spoilage and rework; and specialized work force training.

Recurring Costs. Production costs that vary with the quantity being produced such as labor and materials.

Termination for Convenience. Procedure which may apply to any Government contract, including multiyear contracts. As contrasted with cancellation, termination can be effected at any time during the life of the contract (cancellation is commonly effected between fiscal years) and can be for the total quantity or a partial quantity (whereas cancellation must be for all subsequent fiscal year's quantities).

Termination Liability. The maximum cost the Government would incur if a contract is terminated. In the case of a multiyear contract terminated before completion of the current fiscal year's deliveries, termination liability would include an amount for both current year termination charges and outyear cancellation charges.

Termination Liability Funding. Obligating sufficient contract funds to cover the contractor's expenditures plus termination liability but not the total cost of the completed end items.

FOOTNOTES

APPENDIX A (Pages 46-47)

¹Deputy Secretary of Defense, "Policy Memorandum on Multiyear Procurement", 1 May 1981.

APPENDIX B

SURVEY PARTICIPANTS¹

AEROJET ELECTROSYSTEMS COMPANY
Azusa, CA 91702

AEROJET STRATEGIC PROPULSION
COMPANY
Sacramento, CA 95813

AVCO LYCOMING DIVISION
Stratford, CT 06497

BOEING AEROSPACE COMPANY
Seattle, WA 98124

CHEMICAL SYSTEMS DIVISION
Sunnyvale, CA 94088

GENERAL DYNAMICS CORPORATION
Fort Worth Division
Fort Worth, TX 76101

GENERAL ELECTRIC COMPANY
Re-Entry Systems Division
Philadelphia, PA 19101

HERCULES, INCORPORATED
Hercules Aerospace Division
Magna, UT 84044

HUGHES AIRCRAFT COMPANY
El Segundo, CA 90245

IBM CORPORATION
Federal Systems Division
Owego, NY 13827

LOCKHEED MISSILES & SPACE
COMPANY, INC.
Sunnyvale, CA 94086

AEROJET LIQUID ROCKET COMPANY
Sacramento, CA 95813

AEROJET TACTICAL SYSTEMS
COMPANY
Sacramento, CA 95813

AVCO SYSTEMS DIVISION
Wilmington, MA 01887

BOEING VERTOL COMPANY
Philadelphia, PA 19142

GENERAL DYNAMICS CORPORATION
Convair Division
San Diego, CA 92138

GENERAL ELECTRIC COMPANY
Aircraft Engine Group
Cincinnati, OH 45215

GRUMMAN AEROSPACE CORPORATION
Bethpage, NY 11714

HONEYWELL, INC.
Space & Strategic Systems
Operations
Avionics Division
Clearwater, FL 33516

HUGHES AIRCRAFT COMPANY
Tucson Manufacturing Division
Tucson, AZ 85734

LOCKHEED-GEORGIA COMPANY
Marietta, GA 30063

MARTIN MARIETTA DENVER AERO-
SPACE
Denver, CO 80201

MARTIN MARIETTA ORLANDO
AEROSPACE
Orlando, FL 32855

MCDONNELL DOUGLAS CORPORATION
McDonnell Douglas Astronautics
Company
Huntington Beach, CA 92647

NORTHROP CORPORATION
Hawthorne, CA 90250

PRATT AND WHITNEY AIRCRAFT
GROUP
Manufacturing Division
East Hartford, CT 06108

ROCKWELL INTERNATIONAL
Collins Communications Systems
Division
Richardson, TX 75081

VOUGHT CORPORATION
Dallas, TX 75265

MCDONNELL DOUGLAS CORPORATION
Douglas Aircraft Company
Long Beach, CA 90846

MCDONNELL DOUGLAS CORPORATION
McDonnell Aircraft Company
St. Louis, MO 63166

PRATT AND WHITNEY AIRCRAFT
GROUP
Government Products Division
West Palm Beach, FL 33402

RCA MISSILE AND SURFACE
RADAR
Moorestown, NJ 08054

ROCKWELL INTERNATIONAL
Electronic Systems Group
Anaheim, CA 92803

WESTINGHOUSE ELECTRIC
CORPORATION
Defense Electronics Systems Center
Baltimore, MD 21203

FOOTNOTES

APPENDIX B (Pages 49-50)

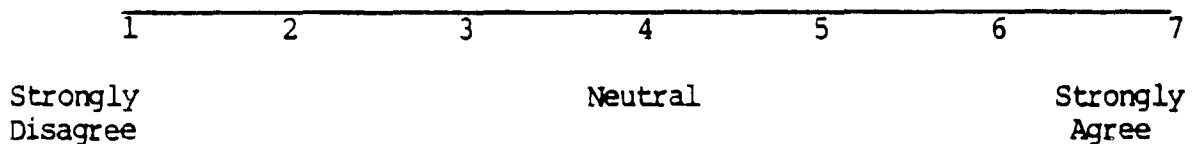
¹Bergans, pp. 161-162.

SURVEY QUESTIONS¹

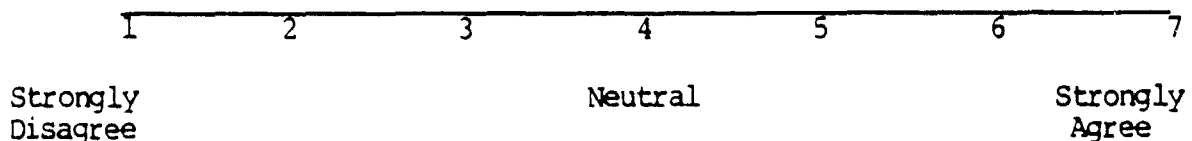
SECTION II

The following questions relate to multiyear procurement issues. Please answer each of the ten statements below by circling one of seven responses. These seven responses are displayed on the answer scale that follows each statement.

15. Widespread use of MYP contracting would result in my firm competing for more defense contracts.



16. Widespread use of MYP contracts would result in more vendors competing for my firm's subcontracted effort.



SECTION IV

In this section, you are again asked to compare annual contracting and MYP. Each question in this section will have two answer scales. Use the first scale to give an answer appropriate for annual contracting, and use the second scale for MYP. As an aid to comparison, Situation I and Situation II are outlined below. Please answer the questions as they relate to your firm.

Situation I. Your firm is engaged in a long term production program for the U.S. Air Force; USAF estimates another eight years of production life. You anticipate that annual contracting will be used for the remaining production years.

Situation II. The same as Situation I, except that USAF has offered you an MYP contract with the following provisions: a five year contract; USAF will reimburse you for materials purchased for use up to two years in the future; and the contract cancellation ceiling has provisions to cover non-recurring costs.

22. What percentage of Department of Defense Request for Proposals (RFP) and Invitations for Bid (IFB) would your firm respond to?

a. Annual contracting

10	25	40	50	60	75	90
or						or
less						more

b. Widespread MYP use

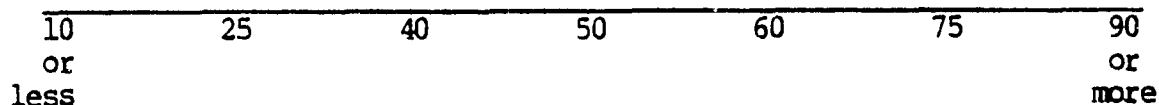
[illegible]

23. What percentage of qualified U.S. firms would bid for subcontracts awarded by your firm for defense programs?

a. Annual contracting

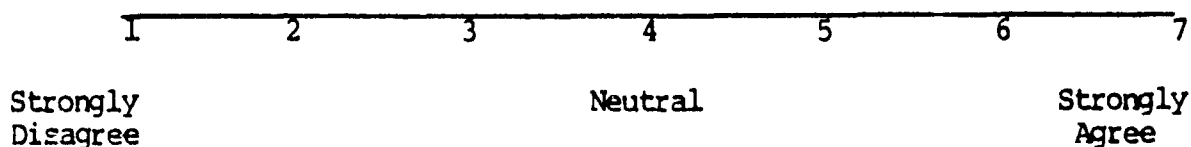
10	25		50	60	75	90
or						or
less						more

b. Widespread MYP use

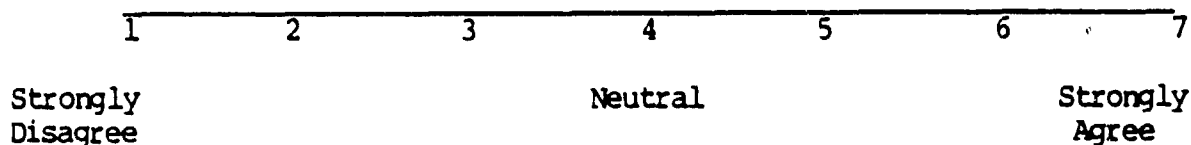


25. Your firm would not compete for a production contract because it anticipates a lack of sufficient profit.

a. Annual contract (Situation I)

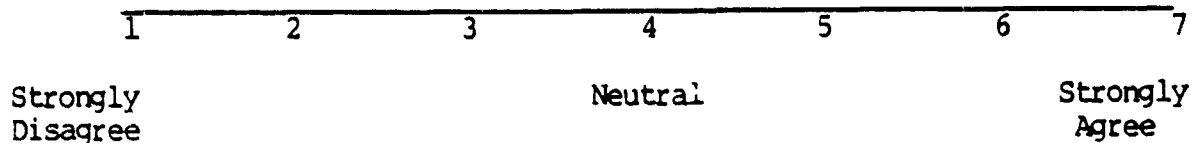


b. MYP contract (Situation II)

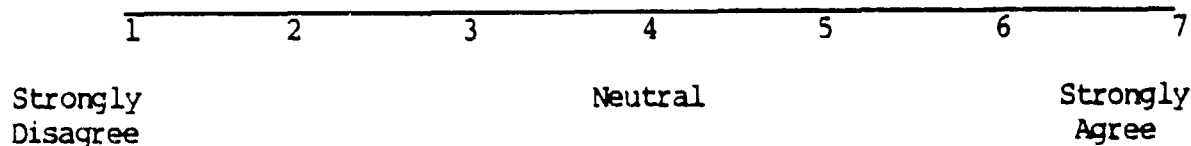


26. Your firm would not compete for a production contract because it anticipates being locked into a long term project.

a. Annual contract (Situation I)



b. MYP contract (Situation II)



FOOTNOTES

APPENDIX C (Pages 52-54)

¹Bergans, pp. 169-177.

APPENDIX D
SURVEY STATISTICAL ANALYSIS

QUESTION	t VALUE	2-TAIL PROB	MEAN	\bar{d} VALUE	NUMBER OF CASES	NULL HYPOTHESIS
Increased Competition						
15			3.951		61	-
16			4.900		60	-
22	-.46	.649	57.708/58.150	-1.042	48	A
23	-5.03	.000	53.800/63.800	-10.000	50	R
25	1.33	.188	4.000/3.736	.264	53	A
26	1.11	.273	2.286/2.107	.179	56	A

The Statistical Package for the Social Sciences (SPSS) was used to analyze the data. Analytical tools used were frequencies and t-tests. The null hypothesis was there is no difference between MYP and annual contracting while the alternative hypothesis was that MYP is better than annual contracting.

The researchers used paired sample t-tests to analyze the data from Section IV of the questionnaire. Paired sample t-tests in SPSS are based upon a paired difference variable, D;

$$D = X_1 - X_2$$

where X_1 = response to situation I and

X_2 = response to situation II

D is normally distributed with mean S.

For Questions 22 and 23 a negative value of D would support the predicted MYP benefits. For these questions, the test hypotheses were formulated as follows:

$$H_0: S = 0$$

$$H_a: S < 0$$

These hypotheses were tested with a one-tailed t-test at $\alpha = .05$.

Questions 24 and 25 were phrased so that positive values of D supported the proposed MYP benefits. For these questions, the test hypotheses were:

$$H_0: S = 0$$

$$H_a: S > 0$$

These hypotheses were also tested with a one-tailed t-test at $\alpha = .05$.

For all statistical tests of data from Section IV of the questionnaire, the t statistic was calculated with the following equation

$$t = \frac{\bar{d} - S}{S_d / \sqrt{n}}, \text{ with } n-1 \text{ degrees of freedom,}$$

where n = number of pairs,

\bar{d} = sample mean paired difference,

S = mean paired difference of the null

hypothesis ($S = 0$), and

S_d = sample standard deviation

The SPSS program computed the two-tailed probability of the occurrence of a t value greater than that calculated above. This two-tailed probability value was then used in the hypothesis testing of data from Section IV of the survey questionnaire.

For Questions 22 and 23 a one-tailed t-test was performed by dividing the two-tailed probability by two, yielding the appropriate one-tailed probability. This one-tailed probability was then compared to the desired significance level ($\alpha = .05$). If the one-tailed probability was less than .05 and the t value was negative, the null hypothesis was rejected.

The hypotheses for Questions 25 and 26 were also tested using the one-tailed probability. In this case, the null hypothesis was rejected if the one-tailed probability was less than .05 and the t value was positive.¹

Readers desiring more information on the survey are referred to the published thesis by Bergans and Elbroch.

FOOTNOTES

APPENDIX D (Pages 56-58)

¹Ibid., pp. 25-27, 242.

APPENDIX F

F-16 EXTERNAL FUEL TANK CANCELLATION CEILING CLAUSE

Cancellation Ceiling for Multi-Year Items

In accordance with DAR 1-322.2(C), and for the purpose of general provision 7-104.47(B), entitled "Cancellation of Items," the following cancellation ceilings are established if cancellation is effected on or before the date specified.

Second Program Year: Cancellation date 82 Oct 31
Ceiling \$366,120.00.

Third Program Year: Cancellation Date 83 Oct 31
Ceiling \$366,120.00

(IAW DAR 1-322.2(A) (8))

APPENDIX F

SAMPLE CANCELLATION CLAUSE

Cancellation Ceiling for Multi-Year Items

In accordance with DAR 1-322.2(C), and for the purpose of general provision 7-104.47(B), entitled "Cancellation of Items," the following cancellation ceilings are established if cancellation is effected on or before the date specified.

Second Program Year: Cancellation Date 82 Dec 31
Ceiling .-0-%

Third Program Year: Cancellation Date 83 Dec 31
Ceiling .-0-%

Fourth Program Year: Cancellation Date 84 Dec 31
Ceiling .-0-%

Fifth Program Year: Cancellation Date 85 Dec 31
Ceiling .-0-%

(IAW DAR 1-322.2(A) (8))

APPENDIX G

SUMMARY OF INTERVIEWS

OFFICE OF THE SECRETARY OF DEFENSE

Mr. Steve Trodden	OSD Comptroller	19 October 82
LTC John Douglas	Spec Asst USDR&E	19 October 82
CDR Ed Bano	USDR&E Acq Mgt	22 October 82
Mr. Paul Berenson	Def Sci Board/USDR&E	23 October 82
Mr. Smith	USDR&E Acq Mgt	17 December 82

INDIVIDUAL SERVICES

UNITED STATES NAVY

Mr. Ron Garant	NavComp Dir Inv/Dev Div	19 October 82
CDR M. McWorter	Mat 02 Asst for Cont	22 October 82
CDR D. Ramelli		

UNITED STATES AIR FORCE

MAJ Jack Runkle	USAF/RDCL	19 October 82
GEN Alton Slay	Ret Commander USAF/AFSC	1 November 82
Mr. Jim Williams	SAF/ALP	6 November 82
Mr. Brent Parrish	Ogden Air Logistics Center/PMW	11 February 83
Mr. Dick Bennet	Ogden Air Logistics Center/PMW	11 February 83
Mr. Warren Pack	Ogden Air Logistics Center Directorate of Contracting and Manufacturing	11 February 83
Mr. Dan Jones	AFLC/PMXL	11 February 83

UNITED STATES ARMY

LTC Al Young	Off Dep COS Res Dev & Acq	22 October 82 5 November 82 4 January 83
COL Sczustak	Off Asst Sec Army RD&A	22 October 82
LTC George Leach	Off Dep Chief of Staff RD&A	7 January 83
Mr. Douglas	U.S. Army Dev & Red Comm	22 October 82
LTC Kelly	Off Dep COS Res Dev & Acq	7 January 83
LTC Smith		
LTC Leach		
MAJ Skipione		

CONGRESS

Mr. Steve Dotson	SASC Professional Staff	20 October 82
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PRIVATE INDUSTRY

Mr. Harvey Fromer	Grumman Aircraft	20 October 82
Mr. Bob Manship	Sperry Univac	8 November 82
Mr. Robert P. Annen	ITT Avionics	26 November 82
Mr. Dick Petruzzelli	Nutley, N.J.	
Mr. Tom Cullen		
Mr. Bill Coleman	Lockheed California	29 November 82
Mr. Gene Kemp	Cubic Corp.	29 November 82
Mr. Dave Whitman	Kennedy School of Gov.	29 November 82
	Harvard University	
Mr. Jim Drake	Hughes Aircraft	1 December 82

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Whitman, David, "Caspar Weinberger and Weapons Acquisition Reform: The Case of Multiyear Procurement (C)," Draft Case Study C-95-82-473, Kennedy School of Government, Harvard University, 1982.